

IGS-1604XSM-16PH

16x GbE RJ45 + 4x 1G/2.5G/10G SFP+ with 16x PoE 300W

- ◆ Supports u-Ring, ERPS, EPS, MSTP, RSTP, STP for Redundant Cabling
- ◆ Auto Checking and Auto Reset When PoE PD Fail
- ◆ EN 62368-1, EN50121-4, EN61000-6-2, EN61000-6-4, CE and FCC Certified



An Industrial 16-port PoE Gigabit Ethernet switch with 4-port 10 Gigabit SFP+ slot, supporting various types of 10 and 2.5 Gigabit optical small form-factor pluggable transceivers for long-distance and wide-bandwidth transmission, each PoE port support IEEE802.3af/at standard of the maximum 30W power output, each switch has a total power budget of up to 300Watts, used to connect and feed various types of Ethernet power devices, such as smoke sensors, Wi-Fi access points, femtocells, alarm centers, and IP cameras. the din-rail and fan less 20-port switch adopts an enhanced and hardened design for high surge protection, wide operating temperature and safety certified to meet critical and centralize strict requirements.

Features

- 48VDC (46~57VDC) redundant dual power input, 55-57VDC input is recommended for environment 75°C application
- Provides 16-port IEEE 802.3af / 802.3at PoE+ output (30W per port. total 300W)
- Cable diagnostics, identifies opens/shorts distance
- Provides 5 ring instances that each can support u-Ring, u-Chain or Sub-Ring type for flexible uses. Supports up to 5 rings in one device (Please see CTC u-Ring white paper for more details and more topology application)
- u-Ring for redundant cabling, recovery time<10ms in 250 devices
- Supports EMS Management

Specifications

Standard		
IEEE 802.3		10Base-T 10Mbit/s Ethernet
IEEE 802.3u		100Base-TX, 100Base-FX, Fast Ethernet
IEEE 802.3ab		1000Base-T Gbit/s Ethernet over twisted pair
IEEE 802.3z		1000Base-X Gbit/s Ethernet over Fiber-Optic
IEEE 802.3ae		10G bit/s Ethernet over Fiber
IEEE 802.3af		PoE (Power over Ethernet)
IEEE 802.3at		PoE+ (Power over Ethernet enhancements)
IEEE 802.1D		STP (Spanning Tree Protocol)
IEEE 802.1w		RSTP (Rapid Spanning Tree Protocol)
IEEE 802.1s		MSTP (Multiple Spanning Tree Protocol)
ITU-T G.8032 / Y.1344		ERPS (Ethernet Ring Protection Switching)
ITU-T G.8031 /Y.1342		EPS (Ethernet Protection Switching)
IEEE 802.1Q		Virtual LANs (VLAN)
IEEE 802.1X		Port based and MAC based Network Access Control, Authentication

Industrial Managed 10G PoE Switch



Standard	IEEE 802.3ac	Max frame size extended to 1522Bytes		
	IEEE 802.3ad	Link aggregation for parallel links with LACP (Link Aggregation Control Protocol)		
	IEEE 802.3x	Flow control for Full Duplex		
	IEEE 802.1ad	Stacked VLANs, Q-in-Q		
	IEEE 802.1p	LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization		
	IEEE 802.1ab	Link Layer Discovery Protocol (LLDP)		
	IEEE 802.3az	EEE (Energy Efficient Ethernet)		
Switch Architecture	Back-Plane (Switching Fabric): 112Gbps (Full Wire-Speed)			
Data Processing	Store and Forward			
Flow Control	IEEE 802.3x for full duplex mode back pressure for half duplex mode			
Network Connector	16x 10/100/1000Base-T RJ-45 + 4x 1G/2.5G/5G/10GBase-X SFP			
	RJ-45 UTP port supports Auto-negotiation speed, Auto MDI/MDI-X function			
	SFP port supports 1G/2.5G/5G/10G speed with DDMI			
Console	RS-232 (RJ-45)			
PoE Standard & RJ-45 Pin Assignment	16x IEEE 802.3af /IEEE 802.3at 2 pairs PoE, PoE+, 30W/port End-Span, Alternative A mode. Positive (V+) : RJ-45 pin 1, 2. Negative (V-) : RJ-45 pin 3, 6.			
Network Cable	UTP/STP Cat. 5e cable or above			
	EIA/TIA-568 100-ohm (100meter)			
Protocols	CSMA/CD			
Reverse Polarity Protection	Supported for power input			
Overload Current Protection	Supported			
CPU Watch Dog	Supported			
Power Supply	Redundant Dual DC 48V (46~57VDC) input power, (Removable terminal block) (50~57V input is recommended for IEEE802.3at PoE+ applications) (55~57VDC input is recommended for environment 75°C application)			
Power Consumption	Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget
	50VDC (60°C)	337W	28.5W	300W
	55VDC (75°C)	335.5W	29W	300W
PoE Power Budget	Maximum PoE Output power budget 30W/port Total 300W			
LED	System: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow)			
	UTP: 10/100 Link/Active (Green), 1000 Link/Active (Amber)			
	SFP Slot: 1G/2.5G Link/Active (Amber), 10G Link/Active (Blue)			
	PoE: ON (Green)			
Jumbo Frame	10KB			
IEEE802.3ac	Max frame size extended to 1522Bytes (allow Q-tag in packet)			
MAC Address Table	32K			
Memory Buffer	4M Bytes for packet buffer			
Device Memory	128M Bytes Flash ROM, 2G Bytes RAM			
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay			
DO(Alarm Relay Contact)	Relay outputs with current carrying capacity of 1A @24VDC			
DI Input	DI 17 to 30 V for state 1, 0 to 15 V for state 0			
Removable Terminal Block	Provides 2 terminal block for DO (Alarm Relay), DI, redundant power PWR1 and PWR2			
Operating Temperature	-40 ~ 60°C (IGS-1604XSM-16PH)			
	-40 ~ 75°C (IGS-1604XSM-16PHE)			
Operating Humidity	5% to 95% (Non-condensing)			
Storage Temperature	-40 ~ 85°C			
Housing	Rugged Metal, IP30 Protection, Fanless			
Dimensions	155.6 x 77 x 160mm (D x W x H)			
Weight	2.355kg			
Installation Mounting	DIN Rail mounting or wall mounting (Optional)			
MTBF	224,776 Hours (MIL-HDBK-217)			
Warranty	5 years			

Certification

EMC	CE (EN55032, EN55035)
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE
Railway Traffic	EN50121-4
Immunity for Heavy Industrial Environment	EN61000-6-2
Emission for Heavy Industrial Environment	EN61000-6-4
EMS (Electromagnetic Susceptibility) Protection Level	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (Burst) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
Safety	EN 62368-1
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-31
Vibration	IEC 60068-2-6

Software Specifications

Topology

VLAN	IEEE 802.1q VLAN, up to 4094 802.1Q VLAN ID IEEE 802.1q VLAN, up to 4094 Groups IEEE 802.1ad Q-in-Q MAC-based VLAN, up to 256 entries IP Subnet-based VLAN, up to 128 entries Protocol-based VLAN (Ethernet, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries GVRP (GARP VLAN Registration Protocol) MVR (Multicast VLAN Registration) Voice VLAN
Link Aggregation (Port Trunk)	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
Spanning Tree	IEEE 802.1D STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP
Multiple μ-Ring	Up to 5 instances that each supports μ -Ring, μ -Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings Recovery time <10ms The maximum number of device is allowed 250 nodes in a Ring.
Loop Protection	Supported
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)	Supported

QoS Features

Class of Service	IEEE 802.1p 8 active priorities queues for per port
Traffic Classification QoS	IEEE 802.1p based CoS, IP Precedence based CoS, IP DSCP based CoS
	QCL (QoS Control List) Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI, Protocol, Source IP IP Fragment, DSCP, TCP/UDP port number
Bandwidth Control for Ingress	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
Bandwidth Control for Egress	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
	Per queue / Port shaper
DiffServ (RF 2474) Remarking	
Storm Control	For Unicast, Broadcast and Multicast

IP Multicasting Features

IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2
	Port Filtering Profile
	Throttling
	Fast Leave
	Maximum Multicast Group : up to 1022 entries
	Query / Static Router Port

Security Features

IEEE 802.1X	Port-Based
	MAC-Based
ACL	Number of rules : up to 256 entries
	for L2 / L3 / L4
	L2 : Mac address SA/DA/VLAN
	L3: IP address SA/DA, Subnet
RADIUS	L4: TCP/UDP
	Authentication & Accounting
TACACS+	Authentication, Authorization and Accounting
HTTPS, HTTP	Supported
SSL / SSH v2	Supported
User Name Password Authentication	Local Authentication
	Remote Authentication (via RADIUS / TACACS+)
Management Interface Access Filtering	Web, Telnet / SSH, CLI RS-232 console

Management Features

CLI	Cisco® like CLI
Web UI	Supported
Telnet	Server
SNMP	V1, V2c, V3
sFlow	Supported
Modbus/TCP	Supports for management and monitoring
SW & Configuration Upgrade	SFTP, TFTP, HTTP
	Redundant firmware in case of upgrade failure
FTP client	Supports for upload/download configuration
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB	RFC1213 MIB II, Private MIB
UPnP	Supported
BOOTP	Supported
DHCP	Server, Client, Relay, Relay option 82, Snooping
RARP	Supported
IP Source Guard	Supported
Port Mirroring	Supported
Event Syslog	Syslog server (RFC3164)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
NTP, SNTP	Client
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol
	LLDP-MED

IPv6 Features

IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	Supported
HTTP over IPv6	Supported
SSH over IPv6	Supported
IPv6 Telnet	Supported

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IPv6 NTP, SNTP	Client
IPv6 TFTP	Supported
IPv6 QoS	Supported
IPv6 ACL	Number of rules: up to 256 entries for L2 / L3 / L4 L2 : Mac address SA/DA/VLAN L3: IP address SIP, Subnet (32bit) L4: TCP/UDP

Others Features

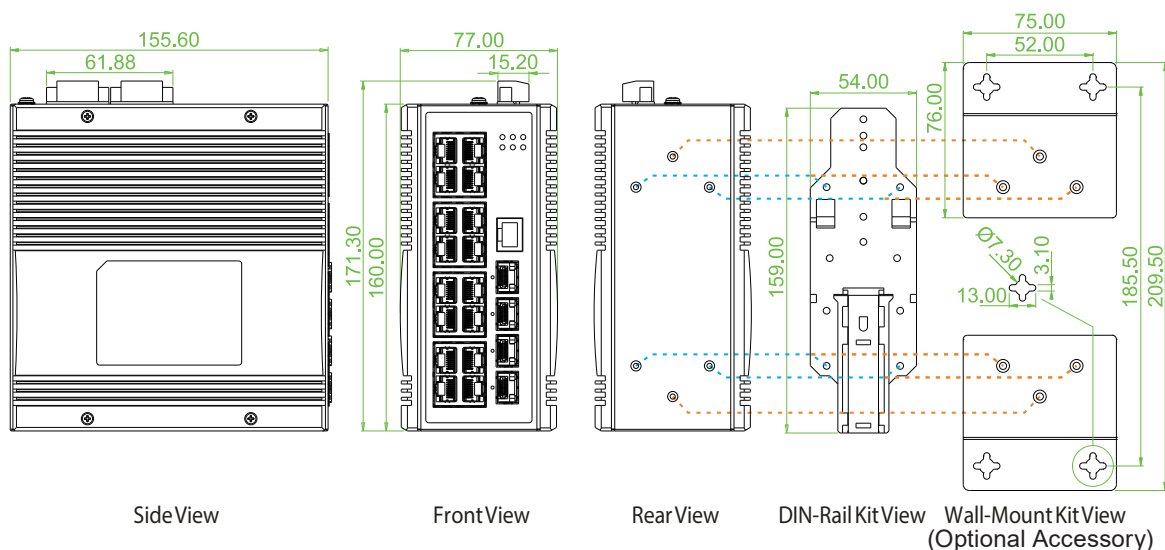
Green Ethernet	Supports IEEE 802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables Lower the power for a port when there is no link LED Power Management :Adjustment LEDs intensity
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Cable Diagnostic	Measuring UTP cable normal or broken point distance
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Advanced PoE

Management	PoE PD failure auto checking, and auto reset when PD fail PoE port on/off weekly scheduling PoE Configuration PoE Enable/Disable Power limit by classification Power feeding priority Total PoE power budget limitation: maximum 300W
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Dimensions



Ordering Information

Model Name	Total Port	RJ45	SFP	PoE		Input Power	Certification				Operating Temperature
		10/100/1000 Base-T(X)	1000/2.5G/5G/10G Base-X	IEEE802.3 at/af	Power Budget		EN 62368-1	EN50121-4	EN61000-6-2 EN61000-6-4	CE, FCC	
IGS-1604XSM-16PH	20	16	4	16	300W	48VDC	V	V	V	V	-40~60°C
IGS-1604XSM-16PHE	20	16	4	16	300W	55VDC	V	V	V	V	-40~75°C

Optional Accessories

■ Wall Mount Kit

IND-WMK04	Wall Mount kit for Industrial product (Wide) (2 pcs in 1 set, 76mm x 75mm x 2pcs)
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■ Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with all CTC Union industrial grade Ethernet switches for guaranteed compatibility and performance. Best performance can be guaranteed, even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheets for more items and detailed information.)

ISFP-M9000-85-D(E)	Industrial SFP 10GBase-SR MM, 300meter, wave length 850nm LC, DDMI, -10~70°C (-40~85°C)
ISFP-S9010-31-D(E)	Industrial SFP 10GBase-LR SM, 10km, 1310nm, 6.4dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-M7000-85-D(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter, wave length 850nm, 7.5dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-T7T00-00-(E)	Industrial SFP 10/100/1000Base-T UTP 100meter, -10~70°C (-40~85°C)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDMI, -10~70°C (-40~85°C)

■ Industrial Power Supply

NDR-480-48	Industrial Power, Input 90 ~ 264VAC/127 ~ 370VDC, Output 48VDC, 480W, -20 ~ 70°C
XDR-480E-48	Industrial Power, Input 85 ~ 264VAC/120 ~ 370VDC, Output 48VDC, 480W, -40 ~ 70°C